

CODEX ALIMENTARIUS COMMISSION E



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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TO Codex Contact Points
Contact Points of international organizations having observer status with Codex

FROM Secretariat,
Codex Alimentarius Commission,
Joint FAO/WHO Food Standards Program

SUBJECT Request for bulking or blending information in the framework of the review of
the IESTI equations

DEADLINE 10 November 2019

COMMENTS To:
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of the IEST Equations
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Background

1. The International Estimated Short-Intake Equations (IESTI equations) are used by Joint FAO/WHO Meetings on Pesticide Residues (JMPR) to assess the short-term dietary intake of pesticide residues. Since 2016, the Codex Committee on Pesticide Residues (CCPR) is working on a review of the risk management and risk communication aspects of the IESTI equations. An international scientific workshop, held in Geneva in 2015, discussed the IESTI equations (EFSA, 2015) and concluded among other things that there are substantial uncertainties and inconsistencies regarding the degree of bulking and blending of the commodities that are evaluated by the 'case 3' IESTI equation. It was recommended to further investigate bulking and blending practices. This type of information is not readily available to risk assessors; therefore CCPR50 (2018) agreed:

- To gather relevant information on bulking and blending, in order to feed into the risk assessors work through the JMPR Secretariat (Items 4 and 13, REP18/PR, paragraph 137 and the Table noted in Appendix XII).

2. Items 4 and 13 in the table noted in Appendix XII of REP18/PR read as follows:

- Item 4 "Information on bulking or blending practices needs to be gathered in order to decide on cases where a median residue instead of the maximum residue limit (MRL) could be used in the dietary risk assessment, or a homogenization factor could be added (see Item 13)."
- Item 13 "For blended foods (e.g. fruit juice, seed/nut oil, flour, corn meal), it is suggested to add a homogenization factor (<1) to the equation to reflect the decreased variability in pesticide residues resulting from processing."

3. The case 3 IESTI equation is used when a raw agricultural commodity or processed commodity is bulked or blended before it goes into trade. The case 3 IESTI equation uses the supervised trials median residue value for raw or processed commodities (STMR or STMR-P) as best estimate for the concentration found in the bulked or blended commodity. Currently, case 3 applies to cereal grains, oilseeds, and pulses when treated pre-harvest as well as to milk and processed commodities such as flour, vegetable oils, fruit juices and various dried and canned vegetables.

Case 3

$$\text{IESTI} = \frac{\text{LP}_{\text{person}} \times (\text{STMR or STMR - P})}{\text{bw}}$$

Bulking or blending information

4. As the current assumptions for bulking or blending are not substantiated by data, information on bulking and blending practices is needed to confirm that the STMR or STMR-P is the best estimate for the concentration found in the bulked or blended commodity.

5. Information could be obtained from institutes involved in agro-food market and chain research or from primary food processing industries and its branch organizations.

6. Bulking is defined here as the combining of a commodity (e.g. cereal grains, oil, sugar) to a large quantity to enable storage or transport in an unpackaged form. Blending is defined here as the mixing of a commodity (e.g. tea, coffee, whisky) to make a consumer product of the desired quality.

7. Different types of case 3 commodities can be distinguished for which bulking or blending information is needed:

- Commodities that are usually bulked or blended before, during or after industrial processing to e.g. juice (orange, apple, grape), wine, beer, oil or dried, frozen, canned, or pickled products.
- Commodities that are usually bulked or blended before trade (e.g. dry beans, dry peas, cereal grains, oilseeds, dried teas).

8. Annex I provides a list of commodities assessed as case 3 commodities in the current JMPR IESTI model and for which bulking or blending information is needed to support the current case 3 status. Because JMPR's focus is primarily about commercialized and traded commodities that go into international trade, bulking and blending information is requested for food commodities that are intended for international trade. The allocation of commodities as case 3 should reflect the most common or usual practices for international trade and should not be based on practices that are exceptional.

9. Not all commodities listed in the Annex I are grown/processed by each Codex Member country, but Codex Members or observers are encouraged to provide reliable bulking or blending information for international trade for as many commodities as possible. It is noted that information on bulking or blending of cereals (rice, wheat, barley), wine, dried tea, and juices (oranges, apples, blackberries, stone fruits) are of primary interest, since exceedances of the ARfD have been observed for these commodities on a more regular basis.

10. Information on bulking and blending will be used to address the question of how a pesticide residue in a commodity gets "diluted" when it is blended with non-treated commodities. With regard to bulking or blending over several farms or several storage facilities it is assumed that pesticide treatment regimes between these farms or storage facilities are different. Single farms come in very different sizes and at large production farms bulking or blending may already have occurred in the field or at the farm. For large production farms, the question then comes down to whether the bulked or blended commodity is derived from areas that received the same pesticide treatment, or from areas that received different pesticide treatments.

REQUEST FOR DATA AND INFORMATION

11. Codex Members and Observers are kindly invited to provide replies to the three questions considering the information given in the Annexes.

Important Notice: The information provided in the Annexes (I and II) are not subject to comments but to aid the consideration of Questions 1 to 3.

Question 1: Do you think that the internationally traded or consumed portion of the commodity in question (from the list in Annex I) can be derived from a single commodity unit, a single farm (in case of pre-harvest treatments) or a single storage facility (in case of post-harvest treatments) or a single pesticide treatment regime (in case of large production farms)? If the answer to this question is Yes, can you substantiate this view?

A good indicator of unbulked/unblended processed commodities is the capability of quality control systems to refer single products back to their producing farms. Can you provide a list of commodities for which such tracking and tracing systems are in place?

Question 2: Do you think that the internationally traded or consumed portion of the commodity in question (from the list in Annex I) is usually bulked or blended over several farms (in case of pre-harvest treatments), over several storage facilities (in case of post-harvest treatments) or over several pesticide treatment regimes (in case of large production farms) before the commodity is internationally traded or consumed?

If the answer to this question is Yes, can you substantiate this view?

- Question 2a: Can you indicate why the raw or processed commodities listed in Annex I are usually bulked or blended before going into international trade?
- Question 2b: Can you provide a qualitative or quantitative description of the bulking or blending procedures that happen between harvest and international trade of the raw or processed commodities listed in Annex I?

In case you have quantitative information on bulking or blending, it would be informative to know in what quantities (weight or volume the commodities are gathered from farms (or storage facilities or areas receiving the same pesticide treatment), from how many farms (or storage facilities or areas receiving the same pesticide treatment) and in what quantities they are bulked or blended before going into international trade. For processed commodities it is of particular interest to know whether the internationally traded commodities are usually bulked or blended (over several farms, storage facilities or pesticide treatment regimes) before, during or after processing and in what quantities.

Question 3: Any other descriptive, qualitative or quantitative information you may have on bulking or blending is welcome.

If available, please provide any information on the bulking or blending techniques and commercial practices of the case 3 commodities listed in Annex I and a good source reference. The bulking or blending information could be provided using the example provided in Annex II, but other formats are welcome as well.

ANNEXES
FOR INFORMATION ONLY
NO COMMENTS ARE REQUESTED ON ANNEXES I AND II
THEY ARE MERELY FOR SUPPORT TO REPLY QUESTIONS 1, 2 AND 3

ANNEX I: Case 3 commodities for which bulking or blending information is requested

Case 3 commodities for which bulking or blending information is requested

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures
Dry pulses (RAC): VD 0071 Beans (dry) VD 0523 Broad bean (dry) VD 0541 Soya bean (dry) VD 0072 Peas (dry) VD 0524 Chick-pea (dry) VD 0533 Lentil (dry)	In the current JMPM IESTI model dry pulses are treated in two ways: pre-harvest treatment = case 3 post-harvest treatment = case 1
Cereal grains (RAC): GC 0650 Rye GC 0654 Wheat GC 0640 Barley GC 0641 Buckwheat GC 0647 Oats GC 0649 Rice GC 0646 Millet GC 0651 Sorghum grain GC 0645 Maize (corn)	In the current JMPM IESTI model cereal grains are treated in two ways: pre-harvest treatment = case 3 post-harvest treatment = case 1
Oilseeds (RAC): SO 0090 Mustard seed SO 0495 Rape seed SO 0691 Cotton seed SO 0693 Linseed (Flax-seed) SO 0696a Palm kernels SO 0696b Palm fruit SO 0697 Peanut, shelled SO 0698 Poppy seed SO 0699 Safflower seed SO 0700 Sesame seed SO 0702 Sunflower seed - Borage seeds - Cucurbitaceae seeds	In the current JMPM IESTI model oilseeds are treated in two ways: pre-harvest treatment = case 3 post-harvest treatment = case 1
Treenuts (RAC) TN 0295 Cashew nut TN 0660 Almonds TN 0660 Almonds TN 0662 Brazil nut TN 0664 Chestnuts TN 0666 Hazelnut TN 0669 Macadamia nut TN 0672 Pecan TN 0673 Pine nut TN 0675 Pistachio nut TN 0678 Walnut	In the current JMPM IESTI model treenuts (nutmeat) are treated as case 1 commodities. The case 1 classification used by the JMPM is challenged because treenuts are industrially bulked or blended (over several farms or pesticide treatment regimes). The unit weight of a coconut is much higher than 25 g, for which case 2 applies. TN 0665 Coconut

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures																														
VR 0596 Sugar beet (RAC)	The unit weight of a sugarbeet is much higher than 25 g, for which case 2 applies. However, as raw sugarbeets are not consumed, only the extracted sugar, sugarbeets are treated as case 3 in the current JMPM IESTI model.																														
GS 0659 Sugar cane (RAC)	The unit weight of a sugarcane is much higher than 25 g, for which case 2 applies. However, as raw sugarcanes are not consumed, only the extracted sugar, sugar cane is treated as case 3 in the current JMPM IESTI model.																														
SB 0715 Cocoa beans (RAC)	Cocoa beans (RAC) are roasted. Various products are prepared: cocoa mass, cocoa powder, cocoa butter. Cocoa beans and its products are treated as case 3 in the current JMPM IESTI model.																														
SM 0716 Coffee beans (RAC)	Green coffee beans (RAC) are roasted. Coffee beans and its products are treated as case 3 in the current JMPM IESTI model.																														
DH 1100 Hops, dry (RAC)	In the current JMPM IESTI model dry hops are treated as case 3 commodities.																														
Dried tea DT 1114 Tea, green, black (RAC)	In the current JMPM IESTI model dried tea is treated as case 3 commodity.																														
Dried herb teas DT 0446 Roselle (RAC) DT 1110 Camomile (RAC) DT 1113 Mate (RAC) - Rooibos leaves (RAC) - Valerian root (RAC)	In the current JMPM IESTI model dried herb teas are treated as case 3 commodities.																														
Canned fruits FC 0003 Subgroup of Mandarins FC 0005 Subgroup of Grapefruits FT 0337 Guava FI 0345 Mango FI 0350 Papaya FI 0353 Pineapple FI 0341 Kiwifruit	<p>Canned fruits, which are divided in parts or cut to pieces before being canned, are treated as case 3 in the current JMPM IESTI model.</p> <p>Canned fruits, which can be derived from a single fruit because whole fruits or fruit halves are canned, are treated as case 1 or case 2 in the current JMPM IESTI model, depending on the weight of the canned fruit units. These commodities concern:</p> <table> <tbody> <tr><td>DM 0305</td><td>Table olives</td></tr> <tr><td>FB 0020</td><td>Blueberries</td></tr> <tr><td>FB 0021</td><td>Currants, black, red, white</td></tr> <tr><td>FB 0264</td><td>Blackberries</td></tr> <tr><td>FB 0265</td><td>Cranberry</td></tr> <tr><td>FB 0269</td><td>Grapes</td></tr> <tr><td>FB 0272</td><td>Raspberries, red, black</td></tr> <tr><td>FB 0275</td><td>Strawberry</td></tr> <tr><td>FI 0343</td><td>Litchi</td></tr> <tr><td>FP 0230</td><td>Pear</td></tr> <tr><td>FS 0013</td><td>Subgroup of Cherries</td></tr> <tr><td>FS 0014</td><td>Subgroup of Plums</td></tr> <tr><td>FS 0240</td><td>Apricot</td></tr> <tr><td>FS 0245</td><td>Nectarine</td></tr> <tr><td>FS 0247</td><td>Peach</td></tr> </tbody> </table> <p>Some of case 1 and case 2 classifications used in the JMPM IESTI model are challenged.</p>	DM 0305	Table olives	FB 0020	Blueberries	FB 0021	Currants, black, red, white	FB 0264	Blackberries	FB 0265	Cranberry	FB 0269	Grapes	FB 0272	Raspberries, red, black	FB 0275	Strawberry	FI 0343	Litchi	FP 0230	Pear	FS 0013	Subgroup of Cherries	FS 0014	Subgroup of Plums	FS 0240	Apricot	FS 0245	Nectarine	FS 0247	Peach
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Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures																																
	<p>Canned pineapple is cut to pieces or slices before being canned and is treated as case 3 in the current JMPR IESTI model because it does not refer to the original unit weight. However, canned pineapple could also be treated as case 2, because a single pineapple can end up in a single can.</p> <p>Canned/preserved table olives and canned litchis still represent the original fruits and can still be considered as individual units ($U < 25$ g) and hence are considered case 1 in the current JMPR IESTI model as is the RAC. However, canned/preserved table olives and canned litchis could also be treated as case 3 because the commodities are industrially bulked or blended (over several farms or pesticide treatment regimes).</p>																																
Canned vegetables VA 0381 Garlic VA 0385 Onion, bulb VA 0384 Leek VB 0041 Cabbages, head VC 0431 Squash, Summer VC 0046 Melons VO 0440 Egg plant (Aubergine) VL 0476 Endive (i.e. Escarole) VL 0502 Spinach VL 0480 Kale VR 0574 Beetroot VR 0578 Celeriac VR 0498 Salsify (Oyster plant) VR 0497 Swede (Rutabaga) VS 0624 Celery VS 0622 Bamboo shoots GC 1275 Sweet corn kernels HH 0624 Celery leaves HS 0784 Ginger, root	<p>Canned vegetables, which are divided in parts or cut to pieces before being canned, are treated as case 3 in the current JMPR IESTI model.</p> <p>Canned vegetables that can be derived from a single vegetable because whole vegetables or vegetable halves are canned are treated as case 1 or case 2 in the current JMPR IESTI model, depending on the weight of the canned vegetable. These commodities concern:</p> <table> <tbody> <tr> <td>VB 0402</td> <td>Brussels sprouts</td> </tr> <tr> <td>VF 0449</td> <td>Fungi, edible, except mushrooms (mainly wild)</td> </tr> <tr> <td>VF 0450</td> <td>Mushrooms (cultivated)</td> </tr> <tr> <td>VL 0269</td> <td>Grape leaves</td> </tr> <tr> <td>VO 0445</td> <td>Peppers, sweet (incl. pimiento)</td> </tr> <tr> <td>VO 0448</td> <td>Tomato</td> </tr> <tr> <td>VP 0061</td> <td>Green beans with pods (immature)</td> </tr> <tr> <td>VP 0062</td> <td>Green beans without pods (succulent seeds)</td> </tr> <tr> <td>VP 0064</td> <td>Peas without pods (succulent seeds)</td> </tr> <tr> <td>VP 0523</td> <td>Broad bean without pods (succulent seeds)</td> </tr> <tr> <td>VR 0577</td> <td>Carrot</td> </tr> <tr> <td>VR 0589</td> <td>Potato</td> </tr> <tr> <td>VS 0620</td> <td>Artichoke globe</td> </tr> <tr> <td>VS 0621</td> <td>Asparagus</td> </tr> <tr> <td>VS 0626</td> <td>Palm hearts</td> </tr> <tr> <td colspan="2">GC 3081 Baby corn</td></tr> </tbody> </table> <p>Some of case 1 and case 2 classifications used in the JMPR IESTI model are challenged.</p> <p>Canned green peas without pods still represent the original seeds and can still be considered as individual units ($U < 25$ g) and hence are considered case 1 in the current JMPR IESTI model as is the RAC. However, canned green peas without pods could also be treated as case 3 because the commodity is industrially bulked or blended (over several farms or pesticide treatment regimes).</p> <p>Canned carrots are generally small (whole) carrots and these can still be considered as individual units ($U < 25$ g) and hence are considered case 1 in the current JMPR IESTI model. However, canned carrots could also be treated as case 3 because the commodity is industrially bulked or blended (over several farms or pesticide treatment regimes).</p>	VB 0402	Brussels sprouts	VF 0449	Fungi, edible, except mushrooms (mainly wild)	VF 0450	Mushrooms (cultivated)	VL 0269	Grape leaves	VO 0445	Peppers, sweet (incl. pimiento)	VO 0448	Tomato	VP 0061	Green beans with pods (immature)	VP 0062	Green beans without pods (succulent seeds)	VP 0064	Peas without pods (succulent seeds)	VP 0523	Broad bean without pods (succulent seeds)	VR 0577	Carrot	VR 0589	Potato	VS 0620	Artichoke globe	VS 0621	Asparagus	VS 0626	Palm hearts	GC 3081 Baby corn	
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Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures
Canned pulses VD 0071 Beans (dry) VD 0523 Broad bean (dry) VD 0072 Peas (dry) (<i>Pisum spp</i>) VD 0524 Chick-pea (dry) VD 0533 Lentil (dry)	In the current JMPM IESTI model canned pulses are treated in two ways: pre-harvest treatment = case 3 post-harvest treatment = case 1
Dried fruits FI 0327 Banana FI 0345 Mango FI 0353 Pineapple FI 0350 Papaya FT 0305 Table olives	Dried fruits which are divided in parts or cut to pieces before being dried are treated as case 3 in the current JMPM IESTI model. Dried fruits that can be derived from a single fruit (because the original fruit or the fruit halve is dried), are treated as case 1 or case 2 in the current JMPM IESTI model, depending on the weight of the dried fruit. These commodities concern: DF 0014 Subgroup of Plums (i.e. prunes) DF 0226 Apple DF 0240 Apricot DF 0269 Grapes (i.e. raisins, currants, sultanas) DF 0295 Date DF 0297 Fig FB 0020 Blueberries FB 0021 Currants, black, red, white FB 0264 Blackberries FB 0265 Cranberry FB 0272 Raspberries, red, black FB 0275 Strawberry FB 1235 Table grapes (i.e. raisins, currants, sultanas) FI 0343 Litchi FP 0230 Pear FP 0307 Persimmon, Japanese (i.e. Kaki fruit) FS 0013 Subgroup of Cherries FS 0245 Nectarine FS 0247 Peach FT 0289 Carambola VF 0449 Fungi, edible, except mushrooms (mainly wild) VF 0450 Mushrooms (cultivated) VO 0444 Peppers, chili VO 0448 Tomato VO 2704 Goji berry VP 0061 Beans with pods VP 0064 Peas without pods (succulent seeds) Some of case 1 and case 3 classifications used in the JMPM IESTI model are challenged. Dried grapes (raisins, currants and sultanas) are derived from grape berries and such the berry is not cut into pieces and can still be considered an individual unit ($U < 25 \text{ g}$) and hence is considered case 1 in the current JMPM IESTI model. However, dried grapes could also be treated as case 3 because the commodity is industrially bulked or blended (over several farms or pesticide treatment regimes).

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures														
	<p>Dried cranberries still represent the original berries and can still be considered an individual unit ($U < 25 \text{ g}$) and hence is considered case 1 in the current JMPM IESTI model as is the RAC. However, dried cranberries could also be treated as case 3 because the commodity is industrially bulked or blended (over several farms or pesticide treatment regimes).</p>														
<p>Dried vegetables</p> <p>VR 0587 Parsley, turnip-rooted</p> <p>VA 0381 Garlic</p> <p>VA 0385 Onion, bulb</p> <p>VA 0384 Leek</p> <p>VB 0400 Broccoli</p> <p>VB 0404 Cauliflower</p> <p>VB 0041 Cabbages, head</p> <p>VC 0431 Squash, Summer</p> <p>VC 0046 Melons</p> <p>VO 0445 Peppers, sweet</p> <p>VO 0440 Egg plant</p> <p>VL 0465 Chervil</p> <p>VL 0502 Spinach</p> <p>VL 0480 Kale</p> <p>VR 0577 Carrot</p> <p>VR 0578 Celeriac</p> <p>VR 0588 Parsnip</p> <p>VR 0506 Turnip, garden</p> <p>VR 0589 Potato</p> <p>VS 0621 Asparagus</p> <p>GC 0447 Sweet corn (on-the-cob)</p> <p>GC 1275 Sweet corn (kernels)</p>	<p>Dried vegetables which are divided in parts or cut to pieces before being dried are treated as case 3 in the current JMPM IESTI model.</p> <p>Dried vegetables that can be derived from a single commodity (because the original vegetable is dried), are treated as case 1 or case 2 in the current JMPM IESTI model, depending on the weight of the dried commodity. These commodities concern:</p> <table> <tbody> <tr> <td>VF 0449</td> <td>Fungi, edible, except mushrooms (mainly wild)</td> </tr> <tr> <td>VF 0450</td> <td>Mushrooms (cultivated)</td> </tr> <tr> <td>VO 0444</td> <td>Peppers, chili</td> </tr> <tr> <td>VO 0448</td> <td>Tomato</td> </tr> <tr> <td>VO 2704</td> <td>Goji berry</td> </tr> <tr> <td>VP 0061</td> <td>Beans with pods (immature pods with seeds)</td> </tr> <tr> <td>VP 0064</td> <td>Peas without pods (succulent seeds)</td> </tr> </tbody> </table>	VF 0449	Fungi, edible, except mushrooms (mainly wild)	VF 0450	Mushrooms (cultivated)	VO 0444	Peppers, chili	VO 0448	Tomato	VO 2704	Goji berry	VP 0061	Beans with pods (immature pods with seeds)	VP 0064	Peas without pods (succulent seeds)
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Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPR procedures
Fruit juices FC 0204 Lemon FC 0205 Lime FC 0003 Subgroup of Mandarins JF 0004 Subgroup of Oranges FC 0005 Subgroup of Pummelo JF 0226 Apple FP 0230 Pear FP 2220 Azarole FS 0013 Subgroup of Cherries FS 0240 Apricot FS 0245 Nectarine FS 0247 Peach FS 0014 Subgroup of Plums FB 0272 Raspberries, red, black FB 0264 Blackberries FB 0020 Blueberries FB 0021 Currants, black, FB 0273 Rose hips FB 0267 Elderberries JF 0269 Grapes FB 1236 Wine grapes FB 0275 Strawberry FB 0265 Cranberry FT 0287 Barbados cherry (acerola) FT 0338 Guava FI 0343 Litchi FI 0327 Banana FI 0345 Mango FI 0350 Papaya JF 0341 Pineapple FI 0365 Soursop (Guanabana) FI 0351 Passion fruit (maracuja) FI 0355 Pomegranate FI 0341 Kiwifruit FI 2483 Cupuaçu	No unit weight can be assigned to fruit juices and they are treated as case 3 in the current JMPR IESTI model.
Vegetable and herb juices VA 0385 Onion, bulb VC 0424 Cucumber VC 0429 Pumpkins VC 0046 Melons VC 0432 Watermelon JF 0448 Tomato VO 0445 Peppers, sweet VL 0510 Cos lettuce VL 0482 Lettuce, head VL 0483 Lettuce, leaf VL 0502 Spinach	No unit weight can be assigned to vegetable and herb juices and they are treated as case 3 in the current JMPR IESTI model.

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPR procedures
VR 0574 Beetroot VR 0577 Carrot VR 0578 Celeriac VS 0624 Celery HH 0722 Basil HH 0738 Mints HH 0740 Parsley	
Jams, jellies, marmalades FC 0204 Lemon FC 0003 Subgroup of Mandarins FC 0004 Subgroup of Oranges FP 0226 Apple FP 0231 Quince FS 0013 Subgroup of Cherries FS 0014 Subgroup of Plums FS 0240 Apricot FS 0245 Nectarine FS 0247 Peach FB 0264 Blackberries FB 0272 Raspberries, red, black FB 0020 Blueberries FB 0021 Currants, black, red, FB 0273 Rose hips FB 0267 Elderberries FB 0265 Cranberry FB 0275 Strawberry FT 0297 Fig FI 0353 Pineapple HS 0784 Ginger, root	No unit weight can be assigned to jams, jellies and marmalades and they are treated as case 3 in the current JMPR IESTI model.
Essential oils FC 0204 Lemon FC 0205 Lime FC 0004 Subgroup of Oranges FC 0005 Subgroup of Pummelo	No unit weight can be assigned to oils and they are treated as case 3 in the current JMPR IESTI model.
Olive oil OR 0305 Olives for oil extraction	No unit weight can be assigned to oils and they are treated as case 3 in the current JMPR IESTI model.
Refined oils OR 0541 Soya bean (dry) GC 0649 Rice (bran oil) OR 0645 Maize (corn) TN 0295 Cashew nut TN 0660 Almonds OR 0665 Coconut TN 0672 Pecan TN 0678 Walnut OR 0495 Rape seed OR 0691 Cotton seed SO 0693 Linseed (Flax-seed)	No unit weight can be assigned to oils and they are treated as case 3 in the current JMPR IESTI model.

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPR procedures
OR 1240 Palm kernels OR 0696 Palm fruit OR 0697 Peanut, shelled SO 0698 Poppy seed OR 0699 Safflower seed OR 0700 Sesame seed OR 0702 Sunflower seed - Borage seeds - Cucurbitaceae seeds - Grape seed TN 0669 Macadamia nut	
Industrially prepared sauce/puree FP 0226 Apple FP 0230 Pear FS 0014 Subgroup of Plums FS 0240 Apricot FB 0272 Raspberries, red, black FB 0020 Blueberries FB 0021 Currants, black, red FB 0265 Cranberry FB 0275 Strawberry FI 0369 Tamarind (sweet) FI 0327 Banana FI 0345 Mango VS 0627 Rhubarb VO 0448 Tomato	The large portions derived from food surveys relate to sauce/puree that has been bought in a shop and hence represent industrial procedures. No unit weight can be assigned to sauce/puree and hence sauce/puree is treated as case 3 in the current JMPR IESTI model. The case 3 classification used in the JMPR IESTI model is challenged. Sauce/puree does not necessarily imply industrial processing but can also relate to household processing. When household processing is taken into account, case 1 would be more appropriate.
Industrially prepared paste VO 0448 Tomato VO 0444 Peppers, chili	The large portions derived from food surveys relate to paste that has been bought in a shop and hence represent industrial procedures. No unit weight can be assigned to paste and hence paste is treated as case 3 in the current JMPR IESTI model.
Wine FB 0269 Grapes FB 1236 Wine grapes	A single wine bottle does not contain the wine from a single grape bunch. No unit weight can be assigned to wine and wine is therefore treated as case 3 in the current JMPR IESTI model. The case 3 classification used in the JMPR IESTI model is challenged. Case 3 would postulate that wine grapes or wine from different producers are bulked/pooled. Wine could also be treated as case 1 because it is not unlikely that wine is coming from one vineyard, and thus, the HR would be a more appropriate estimator for the residues in wine.
Industrially frozen FS 0245 Nectarine FS 0247 Peach VA 0381 Garlic VA 0385 Onion, bulb VA 0384 Leek VB 0400 Broccoli VB 0404 Cauliflower VB 0041 Cabbages, head VC 0431 Squash, Summer	The large portions derived from food surveys relate to frozen commodities that have been bought in a shop and hence represent industrial procedures. Fruits and vegetables are generally cut to pieces and blanched before being frozen industrially. Units weight cannot be assigned to such frozen commodities and the listed frozen commodities are therefore treated as case 3 in the current JMPR IESTI model. Frozen fruits and vegetables that can be derived from a single commodity (because the original fruit or vegetable is frozen), are treated as case 1 or case 2 in the current JMPR IESTI model, depending on the weight of the frozen commodity. These commodities concern:

Case 3 commodities for which bulking or blending information is needed:		Further information on current JMPR procedures	
VO 0445	Peppers, sweet)	FB 0020	Blueberries
VL 0476	Endive (i.e. Escarole)	FB 0275	Strawberry
VL 0502	Spinach	VB 0402	Brussels sprouts
VL 0480	Kale (Borecole, Collards)	VP 0061	Beans with pods: (immature pods + succulent seeds)
VR 0574	Beetroot	VP 0062	Beans without pods:(succulent seeds)
VR 0577	Carrot	VP 0063	Peas with pods: (immature pods + succulent seeds)
VR 0578	Celeriac	VP 0064	Peas without pods (succulent seeds)
VR 0589	Potato	VP 0523	Broad bean without pods (succulent seeds)
VS 0621	Asparagus	The case 3 classification used in the JMPR IESTI model is challenged.	
GC 0447	Sweet corn (on-the-cob)	Frozen commodities do not necessarily imply industrial processing but can also relate to household processing. When household processing is taken into account, case 1 would be more appropriate.	
GC 1275	Sweet corn (kernels)		
HH 0624	Celery leaves		
HH 0740	Parsley		
Sauerkraut		Cabbages are cut to pieces before being transformed into sauerkraut.	
VB 0041	Cabbages, head		
Industrial deep-fried – French fries		The large portions derived from food surveys relate to French fries that have been bought in a shop and hence represent industrial procedures. Potatoes are cut to pieces before being transformed into French fries.	
VR 0589	Potato		
Industrial deep-fried – Crisps		The large portions derived from food surveys relate to crisps that have been bought in a shop and hence represent industrial procedures. Potatoes are cut to thin slices before being transformed into crisps.	
VR 0589	Potato		
Industrial pickled		The large portions derived from food surveys relate to pickles that have been bought in a shop and hence represent industrial procedures. Pickled vegetables which are divided in parts or cut to pieces before being dried are treated as case 3 in the current JMPR IESTI model.	
VA 0384	Leek		
VB 0041	Cabbages, head		
VC 0424	Cucumber		
VO 0445	Peppers, sweet		
VL 0466	Chin cabbage (Pak-choi)	Pickled vegetables that can be derived from a single commodity (because the original vegetable is pickled), are treated as case 1 or case 2 in the current JMPR IESTI model, depending on the weight of the pickled commodity. These commodities concern:	
VR 0574	Beetroot	HS 0773	Caper buds
VR 0577	Carrot	VA 0385	Onion, bulb
VL 0468	Flowering white cabbage	VC 0425	Gherkin
VL 0485	Mustard greens		
Starch		No unit weight can be assigned to starch and starch is treated as case 3 in the current JMPR IESTI model.	
VR 0573	Arrowroot		
VR 0463	Cassava (Manioc)		
VR 0589	Potato		
VR 0504	Tannia		
Coconut milk		No unit weight can be assigned to coconut milk and it is treated as case 3 in the current JMPR IESTI model.	
TN 0665	Coconut		
Butter/paste		No unit weight can be assigned to butter/paste and it is treated as case 3 in the current JMPR IESTI model.	
SO 0697	Peanut, shelled		
SO 0700	Sesame seed		
DM 1215	Cocoa beans		

Case 3 commodities for which bulking or blending information is needed:	Further information on current JMPM procedures
Miso, soya sauce and tofu VD 0541 Soya bean (dry)	No unit weight can be assigned to miso, soya sauce and tofu and it is treated as case 3 in the current JMPR IESTI model.
Milk VD 0541 Soya bean (dry) GC 0650 Rice	No unit weight can be assigned to milk and it is treated as case 3 in the current JMPR IESTI model.
Flour of pulses and oilseeds VD 0541 Soya bean (dry) VD 0072 Peas (dry) VD 0524 Chick-pea (dry) SO 0090 Mustard seed	No unit weight can be assigned to flour and it is treated as case 3 in the current JMPR IESTI model.
Flour of fruits and vegetables FT 0291 Carob VR 0589 Potato VR 0504 Tannia (Tanier, Yautia) VR 0463 Cassava (Manioc) VR 0508 Sweet potato	No unit weight can be assigned to flour and it is treated as case 3 in the current JMPR IESTI model.
Bran, germ, grits, flour, starch GC 0640 Barley GC 0641 Buckwheat GC 0647 Oats GC 0649 Rice GC 0645 Maize (corn) GC 0646 Millet GC 0650 Rye GC 0651 Sorghum grain GC 0654 Wheat	No unit weight can be assigned to cereal milling products and they are treated as case 3 in the current JMPR IESTI model.
Beer and malt GC 0650 Rye GC 0654 Wheat GC 0649 Rice GC 0646 Millet GC 0651 Sorghum grain GC 0645 Maize (corn) GC 0640 Barley	No unit weight can be assigned to beer and malt and they are treated as case 3 in the current JMPR IESTI model.
Flakes GC 0650 Rye GC 0654 Wheat GC 0640 Barley GC 0641 Buckwheat GC 0647 Oats GC 0645 Maize (corn)	In the current JMPR IESTI model flakes are treated as case 3 commodities.

ANNEX II: Fictitious example of information requested

(Amounts and procedures do not represent reality, just meant as example how the information could be provided)

Commodity: Orange juice for international trade and consumption

Orange juice is usually bulked and blended before it is traded. Orange juice for international trade and consumption is not derived from a single orange or a single farm. The following description should prove that.

Bulking of oranges facilitates efficient transport and efficient processing, while blending (in the sense of mixing) of the juice seems unavoidable in that process. Blending for a particular reason (e.g. quality or taste) is not performed.

Quantitative description of the bulking and blending procedures for orange juice that happen between harvest and trade:**Before processing, at the farm:**

The size of the farms is such, that orange tree fields belonging to the same farm, have received the same pesticide treatment. Individual farms, each have their own pesticide treatment regime.

Oranges are picked in the field and collected in 10 kg bins.

Bins are emptied in 1,000 kg (= 1 tonne) lorries.

Lorries are emptied in 10 tonne storage facilities at the farm.

A single farm may have 2-10 of these storage facilities (i.e. 20-100 tonne oranges/farm)

Storage facilities are emptied into 1 tonne lorries for transport to the industrial plant.

At the farm, some mixing of the oranges takes place. First when the 1 tonne harvest lorries are emptied in the larger storage facilities and then again when the storage facilities are emptied in the 1 tonne transport lorries.

During processing, at the industrial plant:

The 1 tonne transport lorries are weighted, and oranges are checked for quality, to set the price for the farmer.

At a single day, the 1 tonne lorries from 5-10 different farms enter the factory in the order of appearance. The empty lorry will return to the same farm and collect another full lorry, until the assigned delivery amounts for that farm are transported.

The oranges are transported on conveyer belts and the 1 tonne quantities are generally not mixed in this process.

A total of 100 tonne oranges/day may be processed into juice. The juice is collected in large vessels with volumes of 5000 L for further pasteurization. The yield is generally 50%, so 5000 L is equivalent to 10 tonnes of oranges. As the oranges arrive in 1 tonne quantities from 5-10 different farms, the juice collection vessel will contain the juice from 5-10 different farms. Because of its liquid nature, the juice is mixed extensively.

The pasteurised juice is distributed over cardboards with a 1 L volume. As a single orange yields 50 ml of juice, a 1 L cardboard box may contain the juice of 20 oranges.

After processing, at distribution

The 1 L cardboards are packaged into pellets containing 20 cardboards boxes. The pellets will end up at different consumer sales centres. The 1 L cardboards will end up at the consumer. No further mixing takes place at distribution.

Quantitative information in tabulated form

Description of process	Quantities
Pesticide treatment	All orange fields/farm receive the same treatment
Orange harvest at the farm	10 kg bins 1 tonne lorries
Orange storage at the farm	10-20 tonne storage facilities
Orange transport	1 tonne lorries
Orange collection at the processing plant	100 tonne oranges/day in 1 tonne quantities in order of appearance of the lorries from 5-10 different farms/day
Orange mixing at the processing plant	Conveyor belts, no mixing between 1 tonne quantities
Juice collection	5000 L vessels Yield is 50%, 5000 L is equivalent to 10 tonne oranges, equivalent to 5-10 different farms
Juice distribution	5000 L vessel distributed in 1 L package
Juice for consumer	1 L package. Yield is 50%, so 1 L package is equivalent to 20 oranges